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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/654,404	09/04/2003	Knut Beekman	WLJ:051D	5467
7590	05/14/2004			
VOLENTINE FRANCOS, PLLC SUITE 150 12200 SUNRISE VALLEY DRIVE RESTON, VA 20191			EXAMINER	
			TOLEDO, FERNANDO L	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 05/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application N .	Applicant(s)
10/654,404	BEEKMAN ET AL.
Examin r	Art Unit
Fernando L. Toledo	2823 <i>(pr)</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) Responsive to communication(s) filed on 04 September 2003.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) Claim(s) 16-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 16-26 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 20030904.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 16, 24 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al. (U. S. patent 5,843,843 A).

In re claims 16, 24 and 26, Lee in the U. S. patent 5,843,843 A; figures 1 – 30B and related text discloses treating the exposed surface with hydrogen or a gaseous source of hydrogen in the presence of a plasma (Column 10, Lines 17 – 26); and depositing the aluminum nitride layer over the exposed surface (Column 11, line 46), wherein inherently the hydrogen treatment is such that x-ray diffraction peak half width on a crystallographic plane of the deposited aluminum nitride layer is narrowed (Column 19, Lines 60 – 67 and Column 20, Lines 1 – 12), because the same materials are treated in the same manner as the instant invention.

*Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 17 – 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee as applied to claims 16, 24 and 26 above and in further view of Ameen et al. (U. S. patent 6,143,128 A).

In re claim 17, Lee does not disclose wherein the plasma is Inductively Coupled Plasma (ICP).

However, Ameen, in the U. S. patent 6,143,128 A; figures 1 – 4 and related text discloses, hydrogen plasma formed by ICP (Column 4, Line 18).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the hydrogen plasma of Lee by ICP, since the teachings of Ameen would enable the practitioners of Lee to form the hydrogen plasma.

6. In re claim 18, Lee in view of Ameen discloses wherein the substrate is placed on an RF biased platen (Column 3, Lines 65 –67 of Ameen).

7. In re claim 19, Lee in view of Ameen discloses wherein the platen is heated (Column 4, Lines 54 – 56 of Ameen).

8. Claims 20 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee as applied to claims 16, 24 and 26 above, and further in view of Roy et al. (U. S. patent 6,025,762 A).

In re claims 20 and 25, Lee does not show wherein the aluminum nitride layer is deposited as a piezoelectric layer of an acoustic wave device.

Roy, in the U. S. patent 6,025,762 A; figures 1 – 8 and related text discloses depositing a metallic layer, such as aluminum, as a piezoelectric layer of an acoustic wave device (Column 2, Lines 66 – 67 and Column 3, Lines 1 – 5).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Lee in view of Roy to enable the formation of the metallic layer.

9. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Kondo et al. (U. S. patent 6,001,736 A).

In re claim 21, Lee discloses treating the exposed surface with hydrogen or a gaseous source of hydrogen in the presence of plasma (Column 10, Lines 17 – 26); and depositing an aluminum nitride layer over the exposed surface (Column 11, Line 46) wherein the hydrogen treatment occurs prior to or during the deposition of the aluminum nitride layer (Column 19, Lines 60 – 67 and Column 20, Lines 1 – 12).

Lee does not disclose wherein the plasma is supplied by a Reactive Ion Etching (RIE) process.

However, Kondo, in the U. S. patent 6,001,736 A; figures 1A – 13 and related text discloses treating an exposed surface with a hydrogen plasma treatment carried out by using RIE plasma since it is preferable to apply high frequency bias to a holder supporting the substrate in order to increase the energy and directivity of ions (Column 18, Lines 24 – 34).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use RIE plasma in the invention of Lee, since as taught by Kondo, RIE is preferable to apply high frequency bias to a holder supporting the substrate in order to increase the energy and directivity of ions.

10. In re claim 22, Lee in view of Kondo discloses wherein the hydrogen treatment time is less than 15 minutes (Column 16, Line 24 of Kondo).

### *Conclusion*

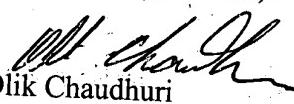
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fernando L. Toledo whose telephone number is 571-272-1867. The examiner can normally be reached on Mon-Thu 7am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
F. Toledo

10 May 2004

  
Olik Chaudhuri  
Supervisory Primary Examiner  
Art Unit 2823